

Effect of Teaching English Stories through Multimedia on Vocabulary Development of Hearing-Impaired Students at Elementary Level

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Abstract

The current study was entitled as, effect of teaching English stories through multimedia on vocabulary development of hearing-impaired students at elementary level. Objective of the study was: (1) to investigate the effects of teaching through stories using multimedia on vocabulary development in English of hearing-impaired students; The hypothesis was; There is no significant effect of teaching through stories on vocabulary development in English of hearing-impaired students by using multimedia. All thirty (30) students both male and female with hearing impairment of grade 5th of National Special Education HIC Centre Mardan were selected as a sample of the study. The sample was divided into two equivalent groups, experimental and control using pair random sampling technique. The Pre-test Post-test equivalent group design was used as a design of the study. Data was collected by a multi questions test used before and after treatment and the collected data were analyzed by t-test. It was found that the experimental group performed better in vocabulary development on post-test. It was suggested for teachers working with hearing impaired students to use multimedia and other simulation approaches for developing academic level and maintaining motivation of the students with disabilities. Researchers interested to work on hearing impaired children may further explore the impact of multimedia-based instruction on diverse variables like motivation, interest dropout rate etc. on students of different academic levels

Keyword; stories, multimedia, hearing-impaired students, vocabulary

Introduction

Human being started learning since their inception by adopting different strategies for proper learning (Drigas, et al., 2008). Learning through storytelling is an old traditional strategy of instruction to students (Shelby-Caffey, Ubeda, & Jenkins, 2014). Storytelling is also considered the way of transmitting knowledge, history, customs, language and culture from one generation to another (Mckeough, et al, 2008). Teaching stories

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through multimedia positively affect vocabulary development of hearing-impaired students (Donne and Briley 2015; Ju, 2009; Lubbad, 2013). The impact of teaching through multimedia is considered as a key to improve academic achievement in form of vocabulary of hearing-impaired students (Naeini & Masood, 2012). Special education institutions equipped with modern technology can increase academic performance of special children (Government of Pakistan, 2002).

In this new era of science and technology, education system is gradually modifying by the use of educational instructional technologies (Hamidi, Meshkat, Rezaee, & Jafari, 2011). As it seems that now educational technologies of different nature are available with easily accessible and affordable nature. These technologies are now an opportunity for all persons with disability to overcome any difficulty they face in the education system. Among these technologies, one is the use of storytelling technique which is used for literacy enhancement for deaf children with good effect (Florez et al., 2019).

There is a large communication gap exist between hearing parents and hearing-impaired children (Adams, & Tidwell, 1989). So, it has been noticed that a suitable solution is needed to connect deaf children with their hearing parents and friends. To reduce this gap a storytelling application, Sign Bright is used to connect deaf and hard of hearing students. This application is used for hearing-impaired children and hearing parents to engage them in activities of storytelling. The application of SignBright develops communication skills, words comprehension, mutual growth and development (Burton, et al., 2011). Teaching stories through multimedia was found good effective in order to makes the classroom environment positive, collaborative, attractive, cooperative, and supportive in which students learn the skills of listening, speaking, reading, and writing. Furthermore, storytelling through multimedia develops better learning and mental ability of the students with a proper way (Kelly, 2008). It develops the confidence and interest of hearing-impaired students in classroom activities (Donne & Briley (2015). Storytelling also improves the level of vocabulary of hearing-impaired students (Mueller & Hurtig, 2009). Ju (2009) further highlighted that presenting visual stories through multimedia have a great positive impact on the development of words, interest, motivation and information of hearing-impaired students.

The communicational problems with hearing-impaired students have made the teaching experiences very challenging. In this connection, diverse techniques are using in different areas of the word to reduce the

communication gap and enhance learning abilities of students with hearing problems (Alsumait et al., 2015). In order to reduce communication gap Harbig et al (2011) introduced an application of storytelling, SignBright. It was applied to strengthen the communication channels between parents and their deaf children. Similarly, Isbell et al., (2004) stressed upon more visual imagination and eye contact on the part of storyteller in future researches. In order to continue this struggle and extend this chain of application of technology along with storytelling approach it was decided to study the effect of teaching English stories through multimedia on vocabulary development of hearing-impaired students at elementary level.

Objective of the study

To investigate the effects of teaching through stories using multimedia on vocabulary development in English of hearing-impaired students.

Significance of the Study

This study may be significant for teachers, curriculum developers and researchers who are working for the academic rehabilitation of hearing-impaired students.

Hypothesis of the study

To achieve the above objective the following null hypothesis was formulated which was tested on the basis of study results.

H₀1: There is no significant effect of teaching through stories on vocabulary development in English of hearing-impaired students by using multimedia.

Literature review

There are several studies have been conducted in the field of education on teaching stories as an instructional methodology, and was noted that storytelling help students in literal knowledge of the participant. Story listening had enhanced the areas of fluency, vocabulary development, retention and writing improvement in self-awareness, visual imagination and understanding of cultural information were also recorded by the researcher (Mello, 2001; Yuksel-Arslan, Yildirim, & Robin, 2016).

Vocabulary is necessary for students to have command on content and get success in academic achievement. Good and comprehensive vocabulary enhances and develops student's mental and cognitive power in classroom. Those students who have a large amount of academic vocabulary take part in classroom's academic tasks and share their

information with class fellows very effectively (Nushi & Jenabzadeh, 2016).

The computer technology made easy for teachers to teach vocabulary on different ways. Teachers can develop the lessons of vocabulary for students on power point slides and also make the classroom's environment effective and pleasant for learning. Students also download different words and information for getting knowledge. At the time of online vocabulary learning, the teacher should guide and monitor the students towards a proper learning. Use of computer in classroom enhances vocabulary and develops interest, attention of students towards learning. There are some sources of learning vocabulary such as online dictionaries, hypertexts, and online tools for vocabulary (Nushi & Jenabzadeh, 2016).

The work of educational theorists on learning is multidimensional phenomenon in nature. Among these, Erickson and Rossi (1976) worked on storytelling and found it supportive in favor of learning. According to Erickson and Rossi (1976), storytelling creates a situation that allows unconscious learning and this learning happens very rapidly as the normal frame of beliefs and orientation modified for a while and new knowledge assimilated easily (Eck, 2006).

Erickson and Rossi (1976) presented a five stage model in support of their theory that how storytelling works on learning phenomenon. 1. fixation of attention, in this stage students give attention towards specific situation of story, 2. depotentiation of habitual frameworks and belief system, in this stage, students completely immersed in the instructions of storyteller, and get new knowledge. 3. unconscious search, in this state the students automatically get new information and knowledge. 4. unconscious process, during this stage students get new ideas and new insight. 5. the hypnotic response, it is the outcome of the unconscious processes induced by the storytelling activity (Eck, 2006). Shortly during teaching of stories, students mentally involve in the activities, (Erickson, 1958). Students give fully attention to the learning experiences which are related to their course content. If the contents of the story are related to the students own experiences then an inner conversation is developed within the students according to the level of listener (Collay, 1998).

Shepherd and Alpert (2015) defined constructivism learning theory that human mind gain knowledge and information from the interaction of situational analysis and their reflexes on learning or behavior. This theory of learning has great impact on learning materials

and methods in the field of learning. Constructivism theory of learning advocates that teaching learning process depend on mental achievement of students. Students have previous knowledge and they get the new information from the assistant of previous knowledge. According to this theory students get the knowledge from experiences. This theory of learning has a great impact on learning and teaching methods.

Mayer also presented a theory, "*cognitive theory of multimedia learning*". According to this theory, students effectively get knowledge and ideas from words and pictures rather than only from verbal and written text. He further explained that multimedia consisted on words and pictures and said that multimedia learning occurs when we build mental representations from these words and pictures (Myer, 2005).

According to cognitive theory of multimedia learning, hearing-impaired students better learn when they are taught stories by captioned videos than who were taught by old print material (Ju, 2009).

Nusir, et al. (2012) described that from the findings of several researches done by Mayer, indicated that the application of multimedia in teaching process is most motivated, meaningful source of learning while traditional method of teaching has less learning impacts on student's learning.

Dual coding theory Paivio (2014) is comprised of verbal representations and mental images. During the learning process both verbal and imaginary work together and make the relevant picture in the mind of students. Picker, (2013) said that following the principles of dual coding theory, teachers teach stories to students in form of text and making imaginary pictures in their minds to clear the concept of story and improve the reading skills of students.

Several studies have been conducted on the impact of teaching stories through multimedia on vocabulary development of hearing-impaired students.

Ju (2009) investigated the effects of multimedia stories of deaf or hard of hearing celebrities on the reading comprehension and English words learning of Taiwanese students with hearing impairment. Objectives of the study were to find out the effect on reading ability, comprehension and English vocabulary and to develop interest and motivation of hearing-impaired students for getting success in academic achievement. Findings of the study revealed that presenting stories through multimedia improved to a great extent the skills of students with respect to identification of main idea, English word pronunciation,

recognition of words, listening comprehension and lip-reading of hearing-impaired students.

Another study conducted by Donne and Briley (2015) on multimedia storybooks, supporting vocabulary of students who were deaf or hard of hearing. Teaching content was comprised on different teaching methods for using three levels of multimedia storybooks. Results of the study showed that by using Power Point multimedia storybooks enhanced receptive vocabulary, and the skills of identification of the context of sentence of deaf students. Similarly

Gentry, et al. (2004) investigated the effectiveness of multimedia-based reading materials for children with hearing impairment. The primary objective of the study was to investigate the effects of teaching stories for improving the reading of hearing-impaired students through multimedia in four different ways: 1. print, 2. print with picture, 3. print with sign language, and 4. print, picture with sign language. Findings of the study showed that presenting stories through print, sign, and pictures on multimedia were found interested for reading comprehension and vocabulary development.

Further, Messier and Wood (2015) investigated the process of facilitating vocabulary acquisition of children with cochlear implants using electronic storybooks. The main purpose of this study was to measure the effectiveness of vocabulary instruction with electronic storybooks for children with cochlear implants. Electronic storybooks were used as a tool of instruction. Results showed that students with cochlear implants may benefit from an oral-only multimedia based intensive vocabulary teaching method.

Research Methodology

Population of the study

All the fifteen hundred and twenty-nine (1529) students both male and female with hearing impairment of class 5th studying in all eighteen schools of deaf and dumb in Khyber Pakhtunkhwa were the population of the study (Govt of Khyber Pakhtunkhwa, 2017).

Sample of the Study

Thirty (30) students of grade 5th of National Special Education HIC Centre Mardan were selected as a sample of the study. The sample was further divided into two equivalent groups, experimental and control groups through pair random technique on the basis of pre-test score.

Design of the Study

The Dialogue

Due to experimental nature of the study and involvement of two equivalent groups the Pre-test-post-test equivalent group Design was best match to measure the effect of teaching English stories through multimedia on vocabulary development of hearing-impaired students at elementary level. Symbolically the design is expressed as;

Groups	Pretest	Treatment	Posttest
E _R	O ₁	T	O ₂
C _R	O ₃	---	O ₄

Where E_R = Randomly Selected Experimental Group

C_R = Randomly Selected Control Group

O₁& O₃ =Pre-test

O₂& O₄ =Post-test

T=Treatment

Data Collection Tool

Teacher made pre-test and post-test were designed with consultation of supervisor for vocabulary measurement. The reliability of the test was determined by using split-half method. Seventeen students of class 5th were selected from National Special Education Centre Mardan other than experimental and control group for reliability testing. The items of the test were bifurcated into two equal halves and then administered among the intended group. The obtained scores of both halves were correlated by using Spearman-Brown Prophecy formula and the reliability co-efficient was calculated which was .92. It indicates that the reliability level of the test was satisfactory.

Procedure of the Study

The National Special Education Centre Mardan was chosen as a sight for experiment. The institute is offering educational facilities to hearing-impaired students. The treatment session was continued for five weeks. Thirty participants were selected from 5th grade as a sample and then further bifurcated into two equivalent groups through peer random techniques on the basis of pretest score. The experimental group was taught English stories through multimedia by the researcher herself being expert in sign language. The same contents were taught to control group by another teacher who was also expert in sign language. The students in experimental group were seated in in "U" shape for getting full attention. Five stories based on the curriculum of 5th grade from the website of

Pakistan sign language (www.psl.org.pk) were selected as contents for treatment sessions. Lesson plans were settled for experimental as control groups. The stories instructed in treatment sessions include;

- i. The Boy Who Cried Wolf
- ii. The Goose That Laid the Golden Eggs
- iii. The Man, The Boy and The Donkey
- iv. The Hare and The Tortoise
- v. The Ugly Duckling

Both groups were taught same contents at the same time. The experimental group was taught stories through multimedia by playing the videos of the English stories and at the same time the researcher was explaining the contents and scene of the stories with sign language. In order to avoid the biasness, the researcher tried her best to limit her to intended plan and avoided her personal interest and further efforts. During class sessions the researcher had tried their best to maintain the discipline in the classroom. As the treatment period ended, Post-test was run on sample to collect data for measuring the effectiveness treatment on vocabulary development.

Data Analysis

The collected data from both post-test and pre-test were analyzed by mean, standard deviation and independent sample t-test in order to understand clear picture of the data. Pre-test was taken from 30 students of 5th grade and the score obtained were arranged in descending order. On the basis of this score the students were divided into two equal groups through pair random technique.

H₀1 There is no significant difference between the mean scores of pre-tests of experimental and control group.

Table1: Significance difference between the mean scores of pre-tests of experimental and control group.

Groups	N	Mean	$\overline{x\Delta x}$	SD	t-value	P
Experimental	15	33.9	0.9	10.72	0.23	0.40
Control	15	33		10.45		

df=28

Table value at 0.05 (2.048)

The table 1 shows that the calculated t-value was less than table value and the p-value.0.04 also greater than 0.05. So these statistics claim that the mean difference between the two mean values is not significant and hence both groups were declared equivalent before the treatment. Further, the values of standard deviation manifest that the spread of data from mean score are same in both groups.

Interpretation of Post-Test Scores

After the formation of two equivalent groups, the experimental group was subjected to treatment for five weeks and soon after the end of treatment, post-test was taken and analyzed using both descriptive and inferential statistics.

H_{0:1} There is no significant difference between the mean scores of pre-tests of experimental and control group.

Table 2: Significance difference between the mean of post-test scores of experimental and control groups.

Groups	N	Mean	$\overline{x\Delta x}$	SD	t-value	P
Experimental	15	47.2	8.2	1.94	3.28	.0013
Control	15	39.0		9.62		

df=28

Table value at 0.05 (2.048)

The table 2 shows that the calculated t-value was greater than table value and p-value, 0.0013 was greater than 0.05. These statistics stand sufficient proof to reject the null hypothesis. The values of standard deviation show that the experimental group was not only better but also showed less variation as compared to control group.

Results and Discussion

According to the result of post test score the performance of the experimental group was found better in vocabulary development in post-test. The results of the study support the findings explored by Donne and Briley (2015), that use of multimedia storybooks on the vocabulary acquirement of seven schoolchildren who were hearing impaired has increased the vocabulary of six students. Similarly, the findings fall in the support of Ju (2009) who noted elevation in English vocabulary and comprehension level of deaf students by teaching multimedia stores of deaf celebrities. Similarly, a positive relation was found between storybook intervention, picture vocabulary identification and vocabulary enhancement among deaf/hard of hearing students, by Trussell & Easterbrooks, (2014) which match with findings of current study without any contradiction. So, it is proved that teaching through stories by using multimedia was effective strategy for enhancing the vocabulary of hearing-impaired children.

Conclusions

On the basis of this result, it may be interpreted that development of vocabulary of hearing-impaired student has been enhanced through teaching stories by multimedia. So, it has been concluded that teaching

through stories by using multimedia had a significant effect on vocabulary development of hearing-impaired students.

Recommendations

The result indicates that teaching stories through multimedia enhanced vocabulary of hearing-impaired students as compare to control group who were taught through conventional sign language method. Hence, on the basis of this finding the following recommendation may be suggested;

1. Hence it is suggested for curriculum planner to place a due weightage for technology implementation in curricular activities.
2. Further the teachers working with hearing impaired students may use multimedia and other simulation approaches for developing academic level and maintaining motivation of the students with disabilities.
3. Researchers interested to work on hearing impaired children may further explore the impact of multimedia-based instruction on diverse variables like motivation, interest dropout rate etc., on students of different academic levels.

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